

**WHAT IS CLAIMED IS:**

1. A method of determining one or more color characteristics of a colored microsphere comprising:
  - providing a microarray of microspheres, at least one of which has a color characteristic;
  - capturing said microarray with an electronic color image sensor assembly having a matrix of pixels to produce an electronic microarray image;
  - detecting the location of a microsphere within said electronic microarray image; and
  - identifying a color characteristic of said detected microsphere.
2. The method of claim 1 wherein said providing provides a microarray of randomly distributed microspheres.
3. The method of claim 2 wherein said microarray includes a coating of a plurality of microspheres on a substrate that has no walls nor sites to attract the microspheres.
4. The method of claim 1 wherein in said capturing said electronic color image sensor assembly includes red, green and blue sensors which capture red, green and blue images which are merged to form a full color microarray image.
5. The method of claim 1 wherein a microsphere in said microarray image falls within the area of a single pixel.
6. The method of claim 1 wherein a microsphere in said microarray image falls within a plurality of pixels and wherein said identifying identifies a color characteristic of said detected microsphere from a subset of pixels of said plurality of pixels.

7. The method of claim 6 wherein said subset of pixels is centrally located within said plurality of pixels.
8. The method of claim 1 wherein said capturing captures a magnified image of said microarray and each microsphere is captured by a plurality of pixels; and  
wherein said identifying includes identifying said color characteristic of said detected microsphere from a subregion of the image of said detected microsphere, said subregion being a subset of pixels of said plurality of pixels.
9. The method of claim 8 wherein said subset of pixels is centrally located within said plurality of pixels.
10. The method of claim 8 wherein said captured magnified image is produced by optical magnification.
11. The method of claim 1 wherein in said capturing said electronic color image sensor assembly includes a monochrome sensor and red, green and blue filters which sequentially capture red, green and blue images which are merged to form a full color microarray image.
12. The method of claim 1 wherein in said capturing said electronic color image sensor assembly includes sensors having at least two different spectral responses which capture at least two different spectral images which are merged to form a color or pseudo-color microarray image.
13. The method of claim 1 wherein in said capturing said electronic color image sensor assembly includes a monochrome sensor and at least two different spectral filters which sequentially capture at least two different spectral images images which are merged to form a color or pseudo-color microarray image.